

Keeping the beat

By Amiko Nevills

Kendell Johnson's heart beats again, thanks to NASA-developed technology and technology transfer capabilities. Two years ago, his future was not so certain. The 18-year-old student collapsed on a court while playing basketball in Newark, N.J. Soon after, he was diagnosed with congestive heart failure. While Kendell remained on a heart donors' list, doctors determined that his failing heart could endure no longer.

It was then that Kendell became a noted name both in medical history and NASA. On May 6, 2001, he received an innovative heart pump – the MicroMed DeBakey VAD®. The VAD has the unique capability of providing continuous blood flow with one internal moving part: A space shuttle fuel pump technology originally developed by NASA.

Kendell continued to live for another two weeks – long enough to receive his new heart. After his lifesaving operation, he went on to attend his high-school prom and walk across the stage to receive his diploma.

Now, at the age of 20, Kendell is a college student and just one of many success stories that have come from Johnson Space Center's Technology Transfer & Commercialization Office (TTCO).

The Beat on JSC Technology Transfer & Commercialization

From its inception, NASA has practiced technology transfer, which is sharing its knowledge and technology development with the private sector. A 1986 Federal Technology Transfer Act mandates that all federal laboratory scientists and engineers have a responsibility to make their technologies available to the private sector.

JSC embraces this responsibility and attempts to stretch its boundaries to maximize its benefits.

"The mechanism of technology transfer offers the means to produce great benefits to the economy by creating jobs and increasing the competitive advantage of our country," said Charlene Gilbert, Director of JSC's TTCO.

"The products generated from these efforts are invaluable to the improvement of our everyday lives."

JSC's TTCO was created in January 1994. Today the office maintains efficiency with 22 civil service and contractor employees who possess a unique mix of skills and expertise. Together the team supports a variety of critical tasks, including:

- Patenting
- Marketing and licensing technologies
- Establishing partnerships with private companies
- Educating the general public

JSC's Office of Patent Counsel provides a vital function for TTCO. "With a patent, the recipient of a license has the power of the patent system behind him or her to exclude others from making, using or selling the technology," said Patent Counsel Ed Fein. "Exclusivity encourages a licensee to invest the risk capital necessary to commercialize the technology – the ultimate goal."

Over the past three decades, JSC has established a portfolio of about 640 patents and pending applications, 150 of which are available now for license by businesses and individuals. Last year, the U.S. Patent Trademark Office issued 15 patents to JSC scientists and engineers. Emerging inventions include a solar-powered refrigerator, a robotic human-like hand and a method and device to treat prostate cancer using microwave energy.

Marketing specialists assist private companies and entrepreneurs in locating relevant technologies to their business. "Increasing the awareness of individuals and various industry sectors is one of the most interesting outcomes of this activity," said Terri Gilbert, the Mid-Continent Technology Transfer Center Marketing Manager for TTCO.

TTCO also establishes partnerships with businesses to research and develop new technologies. One example is the partnership between JSC and the HED (hypohidrotic ectodermal dysplasia) Foundation. The mission of the foundation is to improve the quality of life for children suffering from HED, Sun and Light Reaction Syndrome, Xeroderma Pigmentosum and related disorders that affect the body's ability to cool itself.

Together, JSC and the HED Foundation advanced the development of the ultraviolet protective suits and made them available to children who suffer from disorders causing extreme Sun sensitivity.

"We're bringing this technology out of space and down to Earth to give these children a better quality of life and freedom," said Sarah Moody, HED's founder, before her passing earlier this year.

To learn more about the TTCO, visit: www.technology.jsc.nasa.gov.

Get involved: Teach and inspire

TTCO is dedicated to educating the general public about successes like the heart pump and UV protective suit. One education tool for this purpose is the Benefits of Space traveling exhibit.

Touring across America, the exhibit showcases about a dozen of more than 60,000 products developed from the space program. The trailer also houses a surround-sound theater in which guests view a 10-minute video about the future of human space exploration.

With supervisor's approval, JSC civil service employees may volunteer to travel with the exhibit and teach visitors about the national assets NASA provides.

"I enjoy the opportunity to show the public how space research can benefit their lives," said volunteer Judy White of the Financial Management Division.

Last year, the trailer visited 27 states and had almost 96,000 visitors. In a recent survey, visitor Diane Magnuson said, "It was awesome that such an education was free!"

For more information about how to volunteer, e-mail:
commercialization@jsc.nasa.gov

Why TTCO is important to JSC and you

TTCO seeks research and development that can potentially meet industry and national needs. JSC civil service and contractor employees – including managers, researchers, scientists and engineers – play a vital role in meeting this goal.

Reporting new technologies is every NASA employee's responsibility. This reporting allows JSC to maintain an accurate inventory of its available assets to best identify partnerships and eligible companies.

JSC's inventors are key in maintaining a cutting-edge technology inventory. Royalty-sharing opportunities are available to the inventors and researchers involved in successfully licensed technologies.

Sharing knowledge and inventions creates public awareness of successes and increases the Agency's perceived value as a contributor to America's future.

"I am always proud and honored to represent the work we do at JSC and am thankful to all who contribute to NASA's mission of technology transfer," Charlene Gilbert said. ♦

JSC Inventors honored

Nineteen scientists and engineers were honored this year at the Annual JSC Inventors' Luncheon held at the Gilruth Center on June 21. Following are this year's honorees:

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|---------------------------|-----------------------------|
| • Gregory S. Aber | • Chin H. Lin |
| • G. Dickey Arndt | • James P. Locke |
| • Daniel George Cencer | • Christopher Scott Lovchik |
| • Gregg A. Edeen | • Richard H. Malecki |
| • Michael K. Ewert | • Dennis R. Morrison |
| • Patrick W. Fink | • Phong H. Ngo |
| • Horacio M. de la Fuente | • Jasen L. Raboin |
| • Linda F. Hess | • William C. Schneider |
| • Kriss J. Kennedy | • Scott M. Smith |
| • James D. Lester | |

Pictured at right is one example of last year's successful patents: Michael Ewert's Solar-powered Refrigeration System. Initiated in 1998, the resourceful refrigeration system uses pure sunlight to keep things cooled down. Ewert explained, 'The system stores the energy collected during the day and uses it without requiring a battery.' A start-up company developed primarily to license this technology, Sun Danze Refrigeration, is now focusing on the commercial potentials within developing countries where electricity is not available.

Got ideas?

To report a new technology, submit NASA Form 1679, "Disclosure of Inventions and New Technology," to the TTCO, Mail Code HA, Bldg. 1, Room 257.

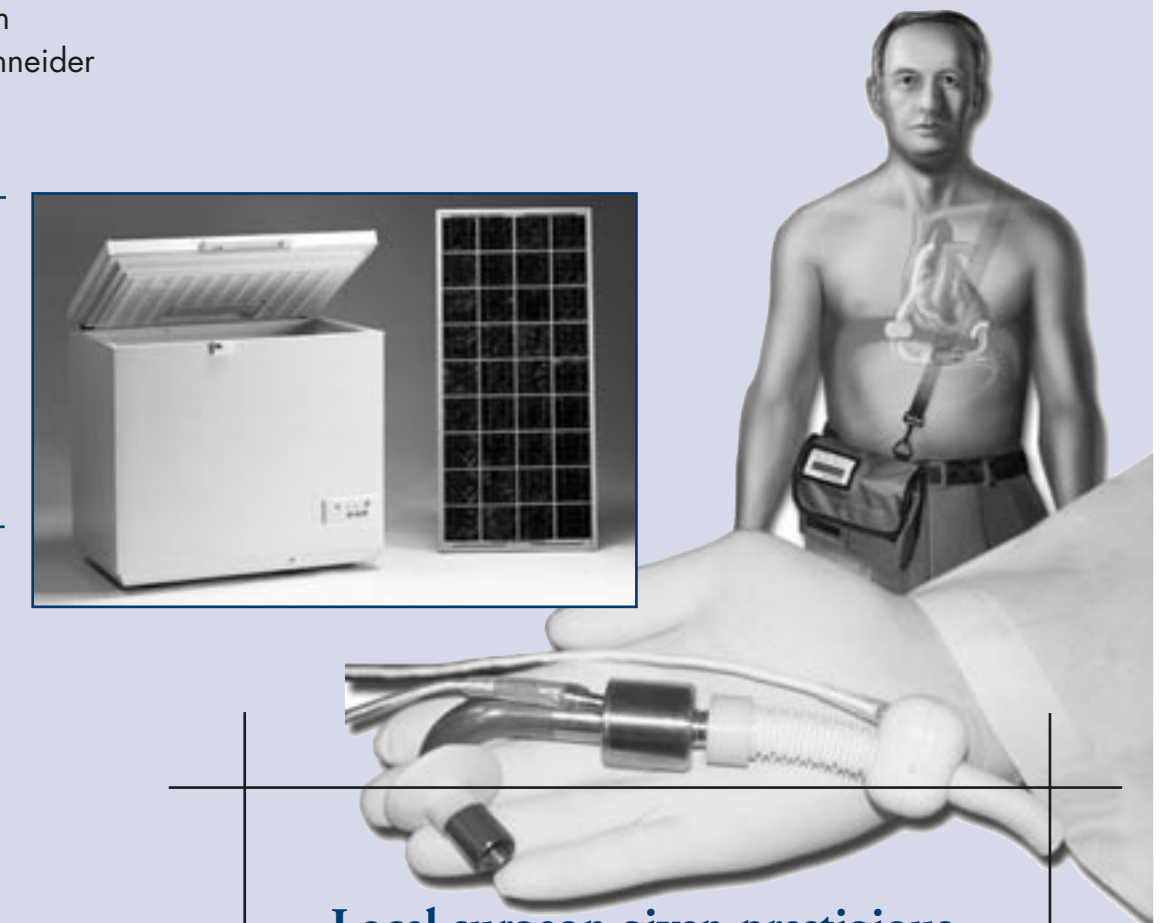
Your new technology will be considered for patent application, license potential to U.S. businesses, *NASA Tech Briefs* publication and/or a scientific and technical contribution award.

To learn more about reporting new technologies, visit:
<http://newtechnology.jsc.nasa.gov>



The Technology Transfer and Commercialization Office team is pictured here. Bottom row (left to right): Rose Rodriguez, Muniz; David Haines; Edward Fein, Patent Counsel; Charlene Gilbert, Director; John 'Jack' James, Deputy Director and Tanya Jefferson. Second row (left to right): James Cate; David Forrest; Mary Barker, Hernandez Engineering; Tom Diegelman; and Kathy Acuna, Hernandez Engineering. Third row (left to right): Kathy Maltese, Meador Staffing; Ted Ro; Esther Williams; Dina Supple, University of Houston; and James Whittington, REI Systems, Inc. Top row (left to right): Terri Gilbert, Mid-Continent Technology Transfer Center; Collin Hieger, REI Systems, Inc.; Reginald Williams; and Stephanie Hunter.

NASA JSC 2002e33321 Photo by James Blair



Local surgeon given prestigious NASA Invention Award

NASA Administrator Sean O'Keefe presented the NASA Commercial Invention of the Year Award to renowned surgeon Michael DeBakey, M.D., during an award ceremony at Headquarters on June 25. Dr. DeBakey, Chancellor Emeritus at Baylor College of Medicine in Houston, was honored for his dedicated work on the development of a space-based medical breakthrough.

Dr. DeBakey worked with a team of JSC engineers to develop a miniature ventricular-assist device designed to bridge the gap of time between a heart patient's need for immediate support and the availability of a donor heart. The same technology used in space shuttle fuel and oxidizer pumps led to the major design of this unique implantable device. It is unique because of its ability to provide continuous blood flow, and its petite size allows it to be used in smaller adult patients.

The heart pump, now known as the MicroMed DeBakey VAD®, is the result of a successful transfer of NASA technology. This medical breakthrough has already been credited with saving many lives. To date the device has been implanted in 136 heart patients, 115 of which were implanted during European trials and 21 during ongoing U.S. trials. The trials in the U.S. will involve about 180 total implants.

A CLOSER LOOK: MICHAEL DEBAKEY, M.D.